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Weekly Bulletin

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Vol. II, No. 10 APRIL 21, 1923 GUY P. JONES, EDITOR

GAMBUSIA AFFINIS;
Its Use in Mosquito Control.

By LOUVA G. LENERT,
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"Gambusia affinis" is the name given to a small, surface-feeding, top-minnow whose native home is in the southeastern part of the United States, ranging from New Jersey southward along the Atlantic seaboard and westward along the entire Gulf coast and as far as Del Rio, Texas, near the Mexican border. It is also found as far north as Tennessee and Missouri. In the South it is frequently spoken of as the "Pot-belly," a cognomen applied because of the shape of the female during breeding season.

The generic name, "Gambusia," is derived from the name "Gambusiana," commonly used in Cuba, which means "small" or "of no importance." It is well that its name was decided upon before its economic value was learned, otherwise we might have been confronted with a name a yard long, in which an attempt would be made to describe its true worth. There is no way in which this could be estimated, but in a small way it can be said to be worth many millions to the Southern States.

It feeds largely upon insects, and wherever it inhabits water in which mosquitoes breed, its principal food consists of mosquito larvae. For the destruction of mosquito larvae it has been found superior to any other species. Because of its small size it is able to penetrate to very shallow depths, where it is free from the attack of predacious fishes. Great numbers are often found in water less than an inch in depth. In fact, conditions which are ideal for mosquito propagation are usually also suited to "Gambusia affinis." It seeks its food at the surface, along the edges of ponds, in the marsh grass and swamps, where it is also protected from large fishes. It is not often found in the open waters where game fish are present.

This fish is viviparous, vigorous and very hardy. It requires no special environment for spawning, the young being in an advanced state of development at birth and not subject to the same dangers which beset the young of oviparous fishes. It is very prolific, producing as many as six to eight broods in a season and averages forty young to a brood. Three generations may be represented in a single season. At birth these minnows are approximately one-half inch in total length, and they have been observed to begin their life of larvae destruction when not more than one day old.

The female attains an average size of two inches when matured, exceptionally large one reaching possibly two and one-half inches in total length while the male rarely attains a length of more than one and one-fourth inches.

Because of its extreme prolification, easy propagation, ability to adapt itself to different conditions and to reach areas not penetrated by other species, exceptional devouring capacity, general habits and living in identical areas with mosquito larvae, "Gambusia affinis" is the most valuable natural agent known for the abatement of mosquito breeding.

As a control measure these minnows may be introduced in stockponds, cisterns, shallow wells, water-troughs. surface reservoirs, irrigation canals, and similar places where oiling or draining prove impracticable. They are especially useful in the suppression of mosquito breeding in slowly moving streams, sloughs and pot-holes in drainage channels.

The question is often asked why, with such a valuable ally, mosquitoes continue to exist in the Southern States. Perfect mosquito control can be secured in any body of water by planting "Gambusia affinis" therein, provided the area is first properly conditioned. Nature's protection of mosquito production consists of algae, drift, debris and aquatic or other dense vegetation. Clean edges and surface free of debris and floating vegetation are of prime importance. Erect vegetation, such as cattails, when not too dense, will not prevent the penetration and control of mosquito breeding by these minnows. Sufficiently clear, shallow edges are necessary as a protection from game fish when present.

Local "hatcheries" are desirable in every locality where the use of "Gambusia affinis" is anticipated. These should be, preferably, rather small ponds containing some plant growth, free from the natural enemies (game fish, water snakes, water fowls, bait collectors, etc.) of the minnows, and situated where they will be easily accessible by automobile or wagon. Only under very exceptional circumstances will it be found necessary to feed them.

In order that every weapon known might be put to use in the control of mosquitoes in California, the State Board of Health in April, 1922, secured a shipment of "Gambusia affinis" from Texas and established a hatchery in what is known as the lily pond at Sutter's Fort, Sacramento. Since that date local hatcheries have been established in Redding, Anderson, Los Molinos, Oroville, Meridian, Bakersfield and Los Angeles. The stock on hand for this purpose now is almost unlimited. Many communities will avail themselves of this opportunity of securing a start for their local "hatchery."

Nature's balance must be remembered at all times, however, and the fact kept in mind that these finny friends can only be counted on for perfect results when proper conditions are met with. They cannot accomplish miracles, and will never entirely replace the ditching, cleaning, brushing and oiling work necessary in every well organized mosquito-control program.

Age, Weight, and Prospects For Living a Long Life.

In its March Statistical Bulletin, the Metropolitan Life Insurance company says that for persons beyond the age of 30, underweight is distinctly an advantage so far as a favorable prospect of mortality is concerned. It adds, "It is erroneous to suppose that weight should increase with age, as we have been led to believe by the tables for average weights. This increase with advancing age is, of course, a very common occurrence, but there is every indication that it is a disadvantage and should be carefully avoided. The public health movement in its attack upon the diseases of adult and later life will do well to bear this fact in mind.

"The body weight of persons in adult and later life gives a fair indication of the amount of work which is thrown upon the digestive, circulatory and excretory systems. As men grow older, the difficulties of normal functioning of these systems increase with the accumulation of impairments. At the same time, persons as they advance in age seem to grow more inclined to take in more food, especially proteins and fats, and less inclined to indulge in wholesome exercise. This has a tendency to place more and more of a strain upon the food utilization machinery and consequently, to hasten the breakdown of the organs concerned in these processes. A realization of these facts on the part of the public would lead, no doubt, to marked changes in habits of diet and exercise and to an amelioration of conditions which today lead to so much mortality from diseases of the heart, blood vessels and kidneys. There is abundant clinical evidence to prove that through the restriction of diet and the encouragement of exercise in adults the conditions premonitory of organic impairment and eventual breakdown of the circulatory and excretory systems have been averted. These facts from life insurance records only tend to reinforce what hygienists have been advocating for years."

Automobile Camps Not For Permanent Residence.

The practice of permitting persons who use municipal and community automobile camps to live in such camps for an indefinite period of time should be stopped without delay. Authorities in charge of many such camps are altogether too lax in the supervision of these places. Automobile camps are not designed for permanent places of residence and the equipment, in most of them, is entirely inadequate for housing campers properly during the entire year. Unless care is exercised in this matter, the automobile camps will defeat the very purpose for which they have been established. Complaint has been made that our camps are developing a new type—the "auto hobo." Time limits should be placed upon the stay of every camp outfit.

* *

Two More States Accept Sheppard-Towner Funds.

Iowa and Oklahoma have recently been added to the list of states whose legislatures have accepted the federal grant, under the Sheppard-Towner law, to be used for work in maternal and infant welfare.

Thirty-one of the states have adopted this necessary procedure for securing federal aid. The bill providing for the acceptance of this money for use in California has passed the assembly and at this writing is about to be acted upon in the senate.

* *

Twelve Smallpox Cases In the Same Family.

Twelve cases of smallpox at the same time in the same family constitutes a record in California.

The first case was in a Los Angeles girl, aged eleven. She was taken ill early in March. On the 27th of March another member of the family became ill, followed the next day by two more. On the 29th, two more children and the mother were taken sick and on the 31st three additional members took to their beds. The last two cases in the family appeared on April 1st and April 4th. None of those who were sick had ever been vaccinated.

* *

Course for Administrators and Instructors in Schools of Nursing.

A special course for administrators and instructors in schools of nursing is offered by Stanford University during the first five weeks of the summer quarter, June 19 to July 25, 1923.

The course is arranged for those interested in either or both of these two specializations of nursing and is open to graduates of accredited schools of nursing who meet the university entrance requirements of graduation from an accredited high school or carefully considered equivalents.

The course will be under the direction of Caroline E. Gray, Director of the Department of Nursing Education, Western Reserve University.

Living accommodations will be available in the women's dormitory on the university campus or in private boarding houses on the campus or in Palo Alto. Many nurses who are engaged in public health work and who are eligible for the course will, no doubt, avail themselves of this opportunity for special instruction. Application blanks and further information may be obtained from the Registrar's office, Stanford University, Cal.

* *

Strychnine, Not Pasteur Treatment, Causes Death.

A resident of San Bernardino, who was bitten by a rabid dog, took the Pasteur treatment for the prevention of the disease. Several months after the completion of the treatment this man was brought to the hospital. He showed symptoms of acute poisoning and died within a few minutes after entering the hospital. An examination of the stomach contents showed the presence of strychnine. Investigation proved that the patient had shortly before his death taken a dose, supposedly of a commercial salt, in common use. The bottle from which he took this supposed salt was washed out and the washings examined for the presence of strychnine, with positive results. A rat, inoculated with washings from the bottle, died within ten minutes.

The Pasteur treatment, therefore, had nothing to do with this man's illness and death. It has been proved conclusively that death was due to strychnine poisoning. Unfortunately, considerable publicity was given to the case in San Bernardino, with the implication that the Pasteur treatment caused the patient's death. The facts in the matter, however, are exactly the reverse.

LIST OF DISEASES REPORTABLE BY LAW.

ANTHRAX
BERI-BERI
BOTULISM
CEREBROSPINAL MENINGITIS (Epidemic)
CHICKENPOX
CHOLERA, ASIATIC
DENGUE
DIPHTHERIA
DYSENTERY
ENCEPHALITIS (Epidemic)
ERYSIPELAS
FLUKES
FOOD POISONING
GERMAN MEASLES
GLANDERS
GONOCOCCUS INFECTION*
HOOKWORM
INFLUENZA
JAUNDICE, INFECTIOUS
LEPROSY
MALARIA
MEASLES
MUMPS
OPHTHALMIA NEONATORUM
PARATYPHOID FEVER
PELLAGRA
PLAGUE
PNEUMONIA
POLIOMYELITIS
RABIES
ROCKY MOUNTAIN SPOTTED (or Tick) FEVER
SCARLET FEVER
SMALLPOX
SYPHILIS*
TETANUS
TRACHOMA
TUBERCULOSIS
TYPHOID FEVER
TYPHUS FEVER
WHOOPING COUGH
YELLOW FEVER

QUARANTINABLE DISEASES.

CEREBROSPINAL MENINGITIS (Epidemic)
CHOLERA, ASIATIC
DIPHTHERIA
ENCEPHALITIS (Epidemic)
LEPROSY
PLAGUE
POLIOMYELITIS
SCARLET FEVER
SMALLPOX
TYPHOID FEVER
TYPHUS FEVER
YELLOW FEVER

***Reported by office number. Name and address not required.**

MORBIDITY.*

Smallpox.

Twenty-eight cases of smallpox have been received, the cases being distributed as follows: Bakersfield 1, Hayward 7, Los Angeles 5, Kern County 1, Ojai 4, Pomona 2, San Joaquin County 3, Stockton 2, Ventura 3.

Typhoid Fever.

Seven cases of typhoid fever have been received, each of the following localities reporting one case: Contra Costa County, Imperial County, Riverside County, Riverside City, Sacramento County, San Joaquin County and Sonoma County.

Cerebrospinal Meningitis.

Los Angeles reported 3 and Santa Rosa and Sonoma County each reported 1 case of cerebrospinal meningitis.

Poliomyelitis.

Chico reported one case of poliomyelitis.

Epidemic Encephalitis.

Five cases of epidemic encephalitis have been reported, each of the following localities reporting one case: Alameda County, Long Beach, Los Angeles, Merced County and San Francisco.

***From reports received to date for last week.**

COMMUNICABLE DISEASE REPORTS.

Disease	1923 Week ending Mar. 24	1923 Week ending Mar. 31	1923 Week ending April 7	Reports for week ending April 14 received by April 17	1922 Week ending Mar. 25	1922 Week ending April 1	1922 Week ending April 8	Reports for week ending April 15 received by April 18
Anthrax	0	0	0	0	0	0	0	0
Cerebrospinal Meningitis	1	2	4	5	1	2	2	0
Chickenpox	282	175	301	282	153	151	177	117
Diphtheria	160	141	158	155	163	161	128	126
Dysentery (Bacillary)	1	0	4	2	0	1	0	0
Epidemic Encephalitis	1	2	7	5	1	4	0	3
Gonorrhoea	89	138	114	119	70	68	91	52
Influenza	425	219	211	63	1529	854	310	134
Leprosy	0	1	1	0	2	1	0	0
Malaria	1	1	0	4	3	3	1	1
Measles	732	813	1113	726	22	22	17	30
Mumps	43	21	34	38	71	56	62	67
Pneumonia	234	207	71	45	188	211	103	90
Poliomyelitis	0	0	1	1	0	1	0	1
Scarlet Fever	210	174	216	120	142	101	123	89
Smallpox	30	13	34	28	38	44	43	40
Syphilis	107	107	146	103	102	113	100	80
Tuberculosis	141	155	188	138	206	288	110	145
Typhoid Fever	2	10	7	7	8	7	16	9
Whooping Cough	211	206	221	147	44	67	87	43
Totals	2670	2385	2831	1988	2743	2155	1370	1027

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